



## **South Holston Reservoir 2007**



South Holston Reservoir is a Tennessee Valley Authority (TVA) impoundment located in Washington County, Virginia and Sullivan County, Tennessee. Dam construction was completed in 1950 to provide power production and flood control. At the full pool elevation of 1,729 feet, the reservoir covers 7,580 surface acres in Tennessee and Virginia. Periodic water releases result in annual water level fluctuations of about 40 vertical feet. The reservoir stretches 23.2 river miles, and reaches 182 miles of shoreline. At full pool elevation, the maximum depth of the reservoir is 245 feet.

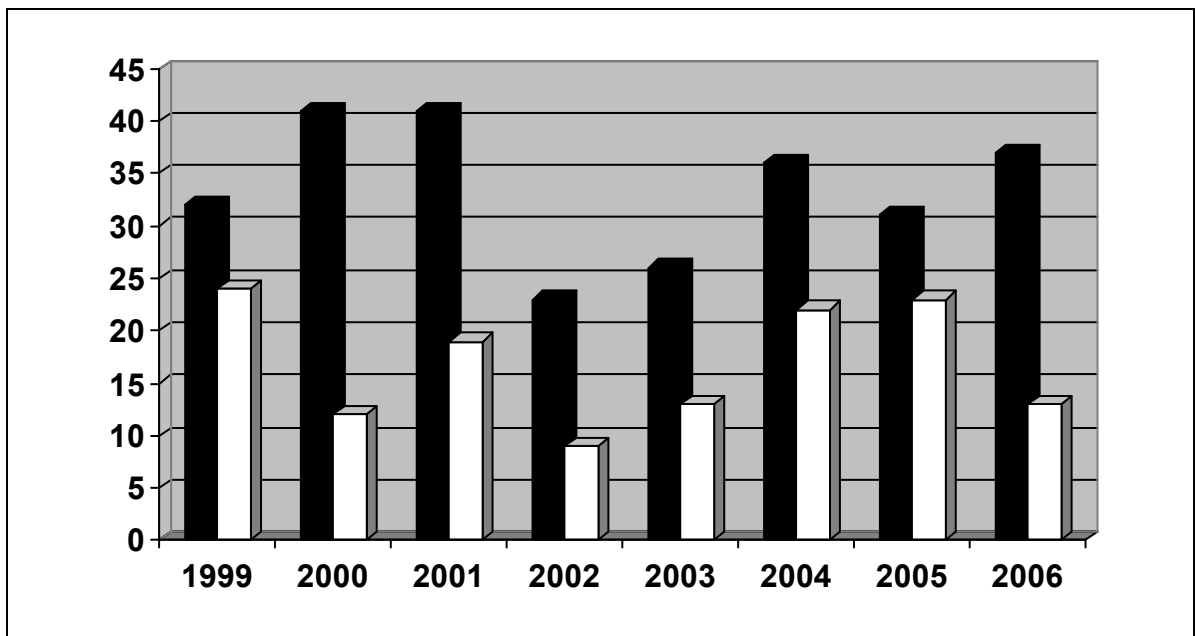
Fisheries resources are managed cooperatively by the Virginia Department of Game and Inland Fisheries (VDGIF) and the Tennessee Wildlife Resources Agency (TWRA). The reservoir supports a variety of sportfish and forage fish species. Historically, the most popular sportfishes have been smallmouth bass, largemouth bass, crappie, white bass, walleye, trout and various species of sunfish. Channel catfish, flathead catfish, common carp, muskellunge, quillbacks and redhorse suckers also provide angling opportunities. Gizzard shad, threadfin shad, and alewives are the primary forage fishes. Most of these species have established self-sustaining populations; however, annual stockings maintain walleye and trout populations. Walleyes are stocked by both agencies, and trout are stocked by TWRA. Both agencies also monitor the status of fish populations by routine sampling, and enhance fish habitat by constructing fish attractors in the reservoir.

The overall management goal for South Holston Reservoir is to provide quality angling opportunities for a diversity of fish species. In order to provide quality fishing opportunities, fish populations need to offer both abundance and good size structure. Fish abundance is measured in terms of how many fish are collected per hour of electrofishing or per net night of sampling. Size structure is measured by looking at the proportion of adult fish in the sample that are larger than a given size. For example, we consider the proportion of adult largemouths larger than 15 inches, or the proportion of adult black crappie that are over 10 inches. Catch rates and size structure data provide a standardized means of comparing this year's fish sample to previous years' catch, as well as to the samples collected at other lakes. Catch rates do not represent the number of fish you might catch while fishing, because you may be more or less effective than the sampling gear. Size structure measures give information about the sizes of fish available in the population. Again, this may not match what you see while fishing, since you might be using gear or techniques that target a particular size range, while sampling gear tends to collect small and average-sized fish. It is likely that you will catch fish larger than those

collected by sampling. The data we collect are best used to track trends in fish populations over time.

### **Black Bass**

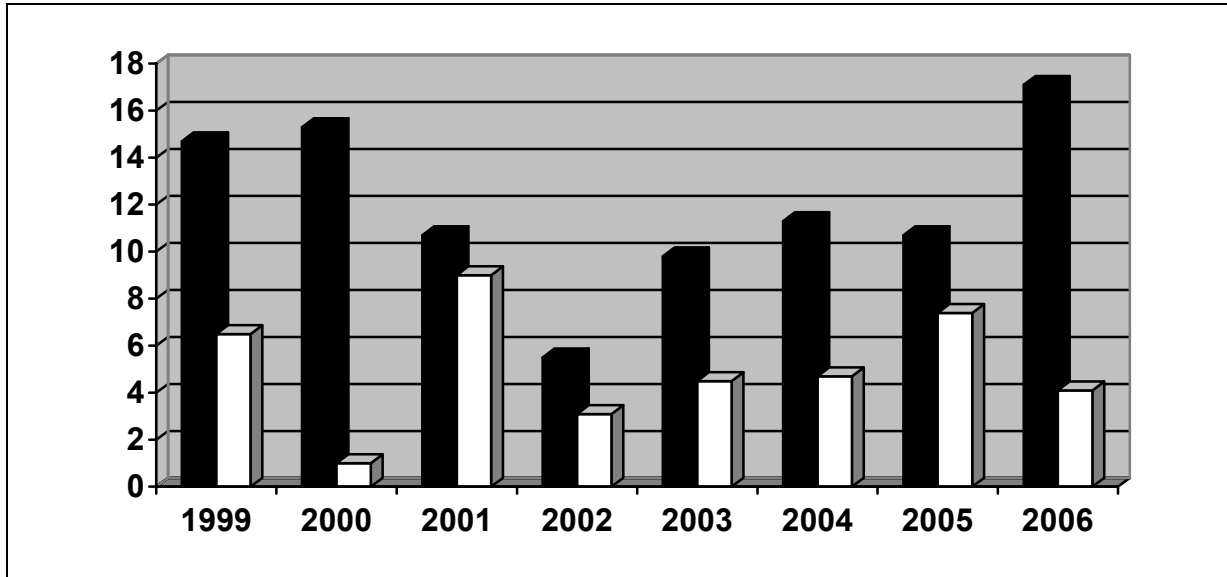
Bass populations in South Holston Reservoir offer decent numbers of good-sized fish. Relative abundance, the number of fish collected per hour of sampling, varies from year to year (Figure 1). The 2006 sample produced 294 largemouths and 108 smallmouths. Catch rates were 37 largemouths and 13 smallmouths per hour of sampling. The catch rate for largemouths was above average, and the trend suggests that abundance is increasing. The smallmouth catch rate was below average in 2006. Smallmouth catch rates seem to fluctuate more than largemouth catch rates, possibly because smallmouth spawn at lower temperatures and either leave the shoreline or stay with the nest as the lake level rises. Water temperature, lake level, recent weather fronts and water clarity can affect sample catch rates. Biologists strive to be consistent with sample dates and sampling effort in order to minimize these confounding effects and obtain data that accurately represent the true abundance of fish in the population each year.



**Figure 1.** Electrofishing catch rates, fish per hour, for largemouth bass (dark columns) and smallmouth bass (light columns) in South Holston Reservoir 1999-2006.

The size structures of the bass populations in South Holston Reservoir are excellent. The 2006 catch rate for preferred size largemouths (15 inches or greater) was the best on record. Almost 50 percent of the largemouths collected were 15 inches or longer. The number of preferred size smallmouths collected per hour of sampling was down a little compared to 2005. This appears to be the result of a reduced total catch

rate, rather than a change in population size structure. About 30 percent of the smallmouths in the 2006 sample were longer than 14 inches, compared to 33 percent in 2005.

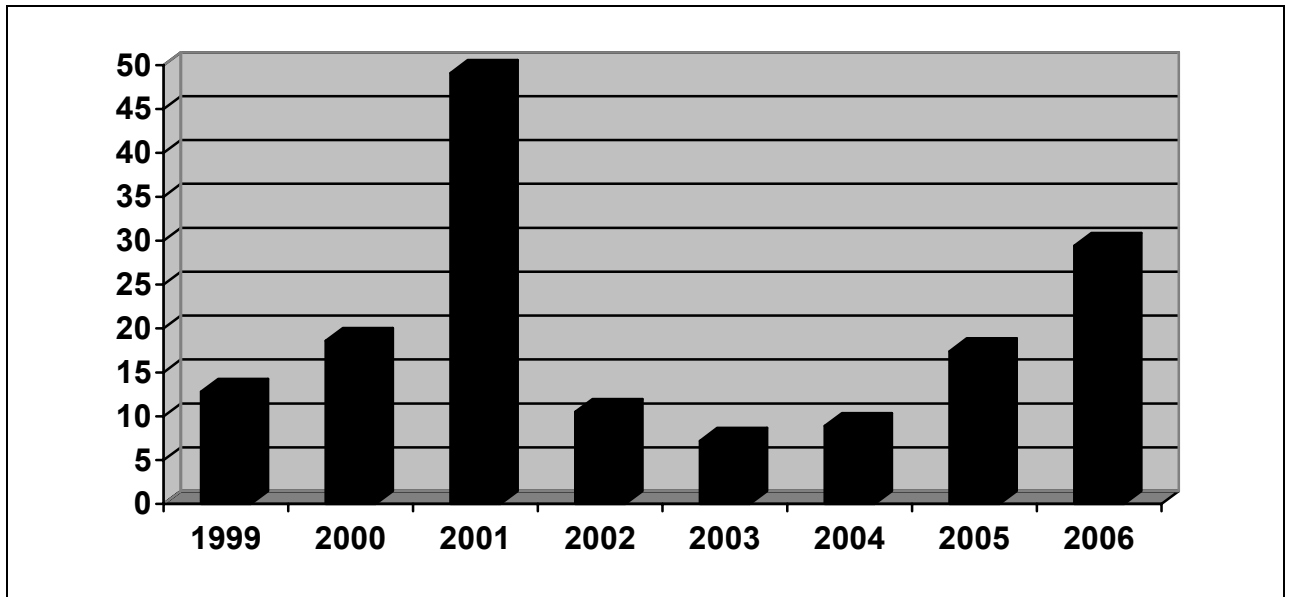


**Figure 2.** Number of preferred size largemouth bass (dark columns) and smallmouth bass (light columns) collected per hour of electrofishing at South Holston Reservoir 1999-2006. Preferred size is 15 inches for largemouths and 14 inches for smallmouths.

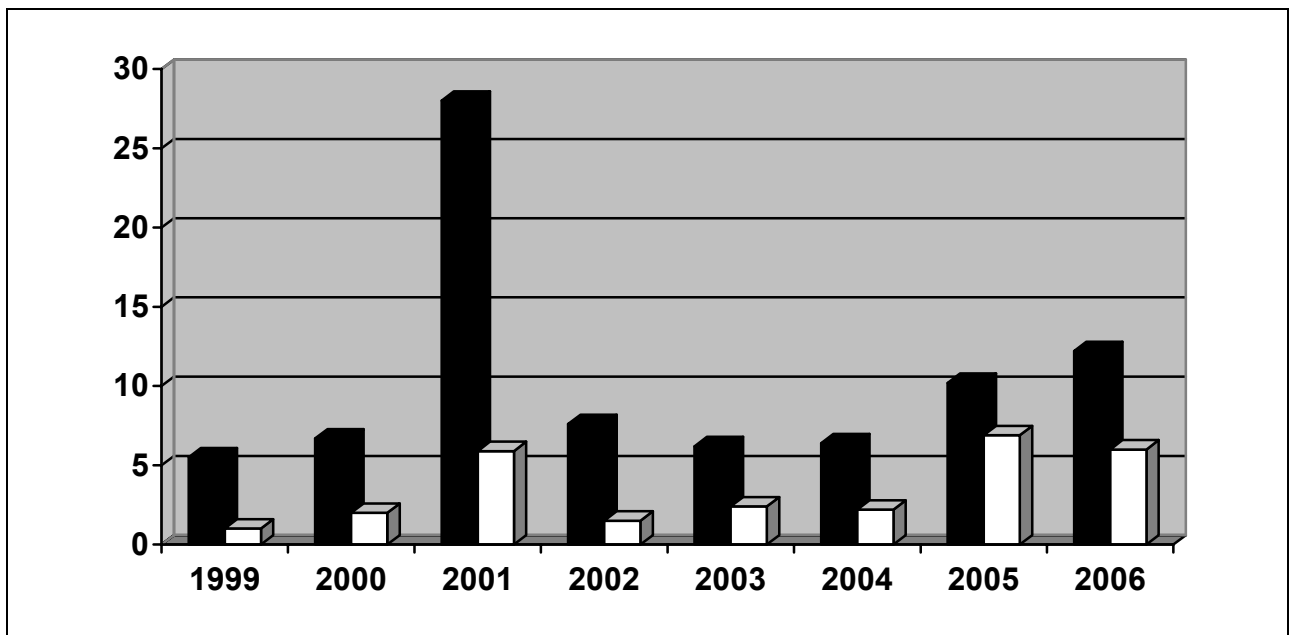
### Crappie

The black crappie population is increasing in abundance. Catch rates increased from 1999 to 2001, then dropped for a couple of years before increasing again (Figure 3). Crappie populations fluctuate based on reproductive success. Strong year classes from good spawns rapidly increase the population and create excellent fishing opportunities. Missing year classes have the opposite effect. The outstanding catch rate in 2001 has been difficult to match, but the current population level should offer outstanding fishing opportunities.

The crappie population in South Holston has excellent size structure. The number of preferred size crappie (10 inches or greater) increased again in 2006 (Figure 4). About forty percent of the crappie in the sample was over 10 inches in length. Catch rates for crappie greater than 12 inches were essentially unchanged. About 20 percent of the black crappie collected measured more than 12 inches. These percentages are very good given the recent recruitment of strong year classes of small fish in the population. There is an abundance of two and three year-old crappie that now measure less than 10 inches.



**Figure 3.** Number of black crappie collected per hour of electrofishing at South Holston Reservoir 1999-2006.

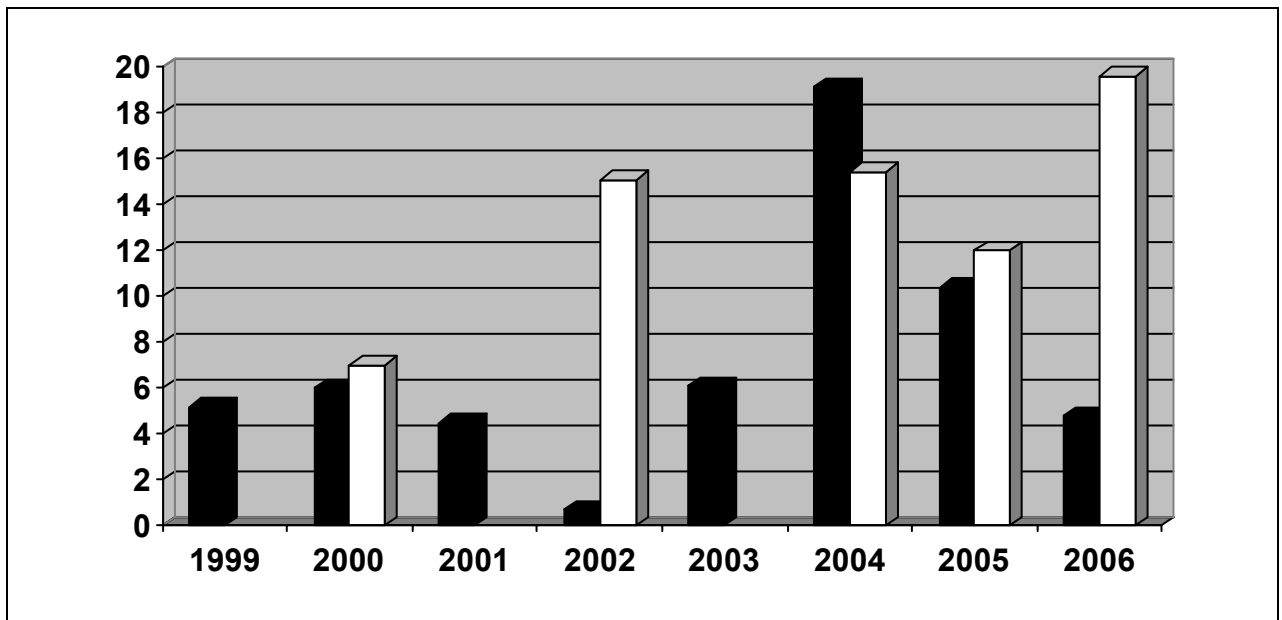


**Figure 4.** Number of preferred and memorable size black crappie collected per hour of electrofishing in South Holston Reservoir 1999-2006. Preferred size is 10 inches for black crappie.

## Walleye

The walleye population in South Holston is doing very well. Electrofishing catch rates vary considerably from year to year (Figure 5). Compared to bass, walleyes are less likely to be associated with shoreline habitat. Daytime electrofishing may not always accurately represent the true population, so gillnets are also used to collect walleyes. The value of gillnet data was evident in 2002 and 2006, when electrofishing catch rates suggested that the walleye population was down, but gillnet catches indicated the population was in great shape.

Growth of stocked walleyes is excellent. Generally, walleyes exceed 10 inches in their first year, measure 16 to 18 inches in their second year, and reach 20 inches by their third year. Recruitment of young walleyes improved greatly in recent years. The increased number of small walleyes is most likely the result of the increased stocking rate and frequency. Walleyes are now stocked in South Holston every year.



**Figure 5.** Sampling catch rates for walleye in South Holston Reservoir 1999-2006. Dark columns represent spring electrofishing catch rates (fish per hour) and light columns represent fall gillnet catch rates (fish per net).

## Other Species

Bluegill size structure is surprisingly good for a reservoir that supports several species of shad. Channel and flathead catfish are also available. The white bass population has declined sharply since 1998. Their decline appears to be related to spring flow conditions that may have affected reproduction. Most of the white bass caught by anglers in recent years were very large adults. Favorable spawning conditions prevailed in 2003 and 2004, but white bass were not collected in fish population sampling.

Biologists and hatchery personnel are working to obtain fry or fingerlings for stocking. The daily creel limit for white bass has been lowered to five fish per angler to offer more protection for spawning adults.

### Fish Condition

Biologists calculate the relative weight of fish to determine if they are in good condition. Relative weight is basically a standardized weight for a fish of a certain length. A relative weight between 90 and 100 is very good. Any score over 100 is considered outstanding. A relative weight in the 70's or low 80's might indicate a lack of food or suitable thermal habitat.

Overall, the fish in South Holston Reservoir are in great condition. The average relative weight of largemouth bass in the 2006 sample was 98. Smallmouth relative weight averaged 91. Black crappie and walleye were also in good condition, with average relative weights of 92 and 97 respectively. All of these species are benefiting from strong forage fish populations.

In summary, black bass should offer decent catch rates, and size structure is excellent. The black crappie population is doing very well, and the increased abundance of small fish should improve catch rates now and provide greater harvest potential in the future. The walleye population appears to be in great shape. Good recruitment of young fish should provide excellent fishing over the next few years.

Prepared by: Tom Hampton, Fisheries Biologist  
Virginia Department of Game and Inland Fisheries  
Phone: (276) 783-4860  
[tom.hampton@dgif.virginia.gov](mailto:tom.hampton@dgif.virginia.gov)